REMARKS/ARGUMENTS

In the specification, the cross-reference to related applications has been amended to reflect proper priority of the application. Each of pending independent claims 46 and 50 has been amended to more clearly define the invention. Claim 53 has been amended to correct a typographical error. Claims 47, 51, and 54-57 have been withdrawn. A complete listing of the withdrawn claims has been added in response to the Official communication from the U.S. Patent and Trademark Office dated July 28, 2005.

Applicants believe that the appropriate fees have been included with the filing of this Response. Nevertheless, should any fee or portion thereof, including any extension of time, be necessary with this filing the Commissioner is hereby authorized to charge such additionally required fees to Account No. 11-1110.

Rejections Under 35 U.S.C §112

Reconsideration of the rejection of the claims under 35 U.S.C. §112 as lacking support in the originally filed application is respectfully requested. The present application claims priority to provisional application No. 60/145,575, ("the '575 provisional") filed July 26, 1999. The '575 provisional included "Attachment A" disclosing a number of deicing and anti-icing formulations, the formulations including components in the presently claimed ranges. The following is a breakdown of the formulations disclosed in the '575 provisional application, including a conversion of the volumetric content by percent to the content of the components by mass, or weight, and ultimately the percent present of each component by weight. The calculations and charts below illustrate the support for the presently claimed weight percentages in the parent '575 provisional application.

Attachment A of the '575 provisional listed components of each deicing and anti-icing composition by percent present by volume. Blend A is the carbohydrate component of some of the deicing and anti-icing compositions. Blend A is described on page 13 of the provisional application and comprises 40% dissolved solids of 25 D.E. (dextrose equivalent) corn syrup by volume. Corn syrup is a carbohydrate composition which includes hexoses, or saccharides having a molecular weight range including carbohydrates in the range of about 180 to 1000, and

1500 grams per mole. Dextrose equivalent is defined as the total amount of reducing sugars expressed as dextrose (glucose) that is present in a corn syrup. 180 grams per mole is the molecular weight of monosaccharides, hexoses, such as glucose and fructose. Corn syrup largely consists of sugars such as hexoses, and polysaccharides based thereon.

Attached hereto as Exhibit A is the carbohydrate basis by chromatographic analysis of various corn syrup compositions. Exhibit A is taken from a publication known as the "Critical Data Tables" published by the Corn Refiners Association. The corn syrups are listed by dextrose equivalent, and the table includes DE 10 to DE 67 (DE 36, DE 43, and DE 63 are also carbohydrate compositions of the present invention). As indicated in the table, DE 25 includes 7.7% monosaccharides (such as fructose and glucose, molecular weight = 180), 7.5% disaccharides (such as sucrose, m.w. = 342), 7.2% trisaccharides (m.w. = 504), 7.2% tetrasaccharides (m.w. = 666), 6.5% pentasaccharides (m.w. = 828), 5.2% hexasaccharides (m.w. = 990), 4.6% heptasaccharides (m.w. = 1152), and 54.1% higher saccharides (m.w. = 1314, 1476, 1638, and higher).

It is also contemplated to use other carbohydrate sources in the deicing compositions of the present invention, including those listed in the following table. The source of the reference in the '575 provisional application is also illustrated in the table:

Carbohydrate	Source in '575 Provisional	Description
DE 25	Pages 13-23, 26-30	Blend of saccharides
Fructose	Page 24	Monosaccharide
Granular sugar (sucrose)	Page 25	Disaccharide
DE 36	Pages 31-32	Blend of saccharides
DE 43	Pages 31-32	Blend of saccharides
DE 63	Pages 31-32	Blend of saccharides

55% High Fructose Corn Syrup	Pages 31-32	Blend of saccharides

A variety of compounds, such as salts, are also listed as being capable of being combined with the sugar-water mixtures of the '575 provisional (See summary of invention, page 4 of '575 provisional). Page 31 of the '575 provisional further includes a list of components with which the sugar water may be used in a deicing composition. The list includes: magnesium chloride, calcium chloride, sodium chloride, potassium chloride, rock salt, sand, cinders, abrasives, urea, calcium magnesium acetate, and potassium acetate.

Blend A is the carbohydrate component of the anti-icing and deicing compositions found in pages 13-23, and 26-30 of attachment A of the '575 provisional. Blend A is comprised of 40% DE 25, and is used in different ratios in combination with 30% $MgCl_2$ to form three different mixtures, namely compositions A-10, A-20, and A-40, the contents of which are shown below:

Deicer Composition	Percent $MgCl_2$ (30% $MgCl_2$ solution) by volume	Percent Blend A (40% dissolved solids) by volume
A-10	90	10
A-20	80	20
A-40	60	40

In order to convert the volumetric content of the compositions to mass content, and finally a weight percentage, it was necessary to first determine the total content, in percent by volume of each component in the deicing compositions. In order to determine the total volumetric percentage for the carbohydrate component, the volumetric percent of dissolved solids of carbohydrates in Blend A (40%) is multiplied by the percentage Blend A is present in each deicing composition. For example, 40% of 10% of deicing composition A-10 (.40 × .10 = 4%) yields 4% carbohydrate by volume. Similarly, deicing composition A-20 comprises 40% dissolved solids (carbohydrate content) of 20% total content (.40 ×.20 = 8%), which yields 8%

carbohydrates by volume. Deicing composition A-40 comprises 40% dissolved solids (carbohydrate content) of 40% total content (.40 × .40 = 16%) which yields 16% carbohydrates by volume.

In order to determine the total volumetric content by percent of the magnesium chloride composition in each deicing composition, the volume percent of $MgCl_2$ in solution (30%) is multiplied by the volume content by percent the $MgCl_2$ solution is in the total composition. For example, 30% of 90% of deicing composition A-10 (.30 × .90 = 27%) yields 27% $MgCl_2$ by volume. Similarly, deicing composition A-20 comprises 30% of 80% total content (.30 × .80 = 24%), which yields 24% $MgCl_2$ by volume. Deicing composition A-40 comprises 30% of 60% total content (.30 × .60 = 18%), which yields 18% $MgCl_2$ by volume.

Water represents the remaining fraction in each composition. The following table represents the present content by volume of each component:

Deicer Composition	Total $MgCl_2$ by volume	Total carbohydrate content by volume	Total water content by volume
A-10	27%	4%	69%
A-20	24%	8%	68%
A-40	18%	16%	66%

The density of each component, which is a known value and is listed on page 26 of the provisional application, was then used to convert the content by volume percent to mass, by weight in grams. The mass in grams of each component was then used to determine the total mass of the composition, which was then used to determine the content of each component by weight percentage.

Composition A-10

$MgCl_2$

The specific gravity of $MgCl_2$ is listed as 1.297 g/cm^3. Assuming 100 cm^3 of composition A-10, the weight in grams is found by multiplying 27 cm^3 by 1.297 g/cm^3 (27 × 1.297 = 35.019 g), which yields 35.019g $MgCl_2$ in composition A-10.

DE 25

The density, or specific gravity of DE 25 corn syrup is more variable than $MgCl_2$, ranging between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition A-10, the weight in grams is found by multiplying 4 cm^3 by 1.30 g/cm^3 (4 ×1.30 = 5.2 g), which yields 5.2g DE 25 in composition A-10.

Water

The density of water at nineteen degrees Celsius is 1.00 g/cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (4% DE25 + 27% $MgCl_2$) = 69%) 69% of the composition. Assuming 100 cm^3 of composition A-10, the weight in grams of water present is determined by multiplying 69 g/cm^3 by 1.00 g/cm^3 (69 × 1 = 69 g), which yields 69g water in composition A-10.

The weights of the individual components are added together to determine the total weight of the composition. The total weight is then utilized to determine each component's weight percentage. For example, $MgCl_2$ (35.019g) + DE25 (5.2g) + water (69g) = 109.219g total weight of composition A-10. 35.019 g of $MgCl_2$ represents 32.06% by weight of composition A-10. 5.2g of DE 25 represents 4.76 % by weight of composition A-10. 69g of water represents 63.18% by weight of composition A-10.

Composition A-20

$MgCl_2$

The specific gravity of $MgCl_2$ is listed as 1.297 g/cm^3. Assuming 100 cm^3 of composition A-20, the weight in grams is found by multiplying 24 cm^3 by 1.297 g/cm^3 (24 × 1.297 = 31.128 g), which yields 31.128g $MgCl_2$ in composition A-20.

DE 25

The density, or specific gravity of DE 25 corn syrup is more variable than $MgCl_2$, ranging between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition A-20, the weight in grams is found by multiplying 8 cm^3 by 1.30 g/cm^3 (8 ×1.30 = 10.4 g), which yields 5.2g DE 25 in composition A-20.

Water

The density of water at nineteen degrees Celsius is 1.00 g/cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (8% DE 25 + 24% $MgCl_2$) = 68%) 68% of the composition. Assuming 100 cm^3 of composition A-20, the grams of water present is determined by multiplying 68 g/cm^3 by 1.00 g/cm^3 (68 × 1 = 68g), which yields 68g of water in composition A-20.

The weights of the components are added together to determine the total weight of the composition. The total weight is then utilized to determine each component's weight percentage. For example, $MgCl_2$ (31.128g) + DE25 (10.4g) + water (68g) = 109.528g total weight of composition A-20. 31.128g of $MgCl_2$ represents 28.42% by weight of composition A-20. 10.4g of DE 25 represents 9.50 % by weight of composition A-20. 68g of water represents 62.08% by weight of composition A-20.

Composition A-40

$MgCl_2$

The specific gravity of $MgCl_2$ is listed as 1.297 g/cm^3. Assuming 100 cm^3 of composition A-40, the weight in grams is found by multiplying 18 cm^3 by 1.297 g/cm^3 (18 × 1.297 = 23.346 g), which yields 23.346g $MgCl_2$ in composition A-40.

DE 25

The density, or specific gravity of DE 25 corn syrup is more variable than $MgCl_2$, ranging between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition A-40, the weight in grams is found by multiplying 16 cm^3 by 1.30 g/cm^3 (16 ×1.30 = 20.8 g), which yields 20.8g DE 25 in composition A-40.

Water

The density of water at nineteen degrees Celsius is 1.00 g/cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (18% $MgCl_2$ +16% DE 25) = 66%) 66% of the composition. Assuming 100 cm^3 of composition A-40, the grams of water present is determined by multiplying 66 g/cm^3 by 1.00 g/cm^3 (66 × 1 = 66 g), which yields 66g of water in composition A-40.

The weights of the components are added together to determine the total weight of the composition. The total weight is then utilized to determine each component's weight percentage. For example, $MgCl_2$ (23.346g) + DE25 (20.8g) + water (66g) = 110.146g total weight of composition A-40. 23.346 g of $MgCl_2$ represents 21.20% by weight of composition A-40. 20.8g of DE25 represents 18.88 % by weight of composition A-40. 66g of water represents 59.92% by weight of composition A-40.

The following table summarizes the weight of each component present in the compositions, as well as the percentage of the composition represented by the weight:

Composition	$MgCl_2$		D.E.25		Water	
	Mass (g)	% by weight	Mass (g)	% by weight	Mass (g)	% by weight
A-10	35.019	32.06%	5.2	4.76%	69	63.18%
A-20	31.128	28.42%	10.4	9.50%	68	62.08%
A-40	23.346	21.20%	20.8	18.88%	66	59.92%

In addition to the variety of carbohydrate compositions, which may be used in the compositions of the present invention, a wide range of concentrations of the carbohydrate solution is also contemplated; for example, solutions from 5% dissolved solids to 100% dissolved solids, may also be used. It is clearly stated on page 31 of the '575 provisional, "based upon the data collected, all forms of sugar are a viable road de-icer if formulated correctly. Concentrations from 10% DS [dissolved solids] to 100% DS are applicable." Since it is therefore contemplated to use a sugar solution of 100% dissolved solids ("DS-100"), we can determine the mass of the components in deicing compositions of the '575 provisional by substituting DS-100 for Blend A, which is 40% dissolved solids. DS-100 solution can be combined in the taught ratios with 30% $MgCl_2$ to form deicing compositions of: 1) 90/10 ratio of $MgCl_2$/ DE 25 ("(DS-100)-10"); 2) 80/20 ratio of $MgCl_2$/ DE 25 ("(DS-100)-20"); and 3) 60/40 ratio of $MgCl_2$/ DE 25 ("(DS-100)-40").

In order to convert the volumetric content of the compositions to mass content, and finally a weight percentage, it was necessary to first determine the total content, in percent by volume of each component in the deicing composition. In order to determine the total volumetric percent of the carbohydrate component, the volumetric percent of dissolved solids of carbohydrates of DS-100 (100%) is multiplied by the amount of DS-100 present in each deicing composition. For example, 100% of 10% carbohydrate by volume for deicing composition (DS-100)-10 ($1 \times .10 = 10\%$) yields 10% carbohydrates by volume. Similarly, deicing composition (DS-100)-20 comprises 100% dissolved solids of 20% total content ($1 \times .20 = 20\%$), which yields 20% carbohydrates by volume. Deicing composition (DS-100)-40 comprises 100% dissolved solids of 40% total content ($1 \times .40 = 40\%$), which yields 40% carbohydrates by volume.

In order to determine the total content by volume of the magnesium chloride composition in each deicing composition, the volume percent of $MgCl_2$ in solution (30%) is multiplied by the volume content percent the $MgCl_2$ solution is in the total composition; for example, 30% of 90% for deicing composition (DS-100)-10; (.30 × .90 = 27%), which yields 27% $MgCl_2$ by volume. Similarly, deicing composition (DS-100)-20 comprises 30% of 80% total content (.30 × .80 = 24%), which yields 24% $MgCl_2$ by volume. Deicing composition (DS-100)-40 comprises 30% of 60% total content (.30 × .60 = 18%), which yields 18% $MgCl_2$ by volume. The following table represents the content by volume of each component:

Deicer Composition	Total $MgCl_2$ by volume	Total carbohydrate content by volume
(DS-100)-10	27%	10%
(DS-100)-20	24%	20%
(DS-100)-40	18%	40%

The density of each component, which is a known value and is listed on page 26 of the provisional application, was then used to convert the content by volume percent to content by mass in grams. The mass in grams of each component was then used to determine the total mass of the composition, which was then used to determine the content of each component by weight percent.

Composition (DS-100)-10

$MgCl_2$

The specific gravity of $MgCl_2$ is listed as 1.297 g/cm3. Assuming 100 cm^3 of composition (DS-100)-10, the weight in grams is found by multiplying 27 cm^3 by 1.297 g/cm^3 (27 × 1.297 = 35.019 g), which yields 35.019g $MgCl_2$ in composition (DS-100)-10.

DE 25

The density, or specific gravity, of DE 25 corn syrup is more variable than $MgCl_2$, ranging between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition (DS-100)-10, the weight in grams is found by multiplying 10 cm^3 by 1.30 g/cm^3 (10 ×1.30 = 13 g), which yields 13g DE 25 in composition (DS-100)-10.

Water

The density of water at nineteen degrees Celsius is 1.00 g/cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (10% + 27%) = 63%) 63% of the composition. Assuming 100 cm^3 of composition (DS-100)-10, the weight in grams of water present is determined by multiplying 63 g/cm^3 by 1.00 g/cm^3 (63 × 1 = 63 g), which yields 63g water in composition (DS-100)-10.

The weights of the components are added together to determine the total weight of the composition; and the total weight is then utilized to determine each component's weight percentage. For example, $MgCl_2$ (35.019g) + DE 25 (13g) + water (63g) = 111.019g total weight of composition (DS-100)-10. 35.019g of $MgCl_2$ represents 31.54% by weight of composition (DS-100)-10. 13g of DE 25 represents 11.71% by weight of composition (DS-100)-10. 63g of water represents 56.75% by weight of composition (DS-100)-10.

Composition (DS-100)-20

$MgCl_2$

The specific gravity of $MgCl_2$ is listed as 1.297 g/cm^3. Assuming 100 cm^3 of composition (DS-100)-20, the weight in grams is found by multiplying 24 cm^3 by 1.297 g/cm^3 (24 × 1.297 = 31.128g), which yields 31.128g $MgCl_2$ in (DS-100)-20.

DE 25

The density, or specific gravity of DE 25 corn syrup is more variable than $MgCl_2$, ranging between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition (DS-100)-20, the weight in grams is found by multiplying 20 cm^3 by 1.30 g/cm^3 (20 ×1.30 = 26g), which yields 26g DE 25 in composition (DS-100)-20.

Water

The density of water at nineteen degrees Celsius is 1.00 g/cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (20% + 24%) = 56%) 56% of the composition. Assuming 100 cm^3 of composition (DS-100)-20, the grams of water present is determined by multiplying 56 g/cm^3 by 1.00 g/cm^3 (56 × 1 = 56g), which yields 56g of water in composition (DS-100)-20.

The weights of each individual component are added together to determine the total weight of the composition. The total weight is then utilized to determine each component's weight percentage. For example, $MgCl_2$ (31.128g) + DE25 (26g) + water (56g) = 113.128g total weight of composition (DS-100)-20. 31.128g of $MgCl_2$ represents 27.52% by weight of composition (DS-100)-20. 26g of DE 25 represents 22.98% by weight of composition (DS-100)-20. 56g of water represents 49.50% by weight of composition (DS-100)-20.

Composition (DS-100)-40

$MgCl_2$

The specific gravity of $MgCl_2$ is listed as 1.297 g/cm^3. Assuming 100 cm^3 of composition (DS-100)-40, the weight in grams is found by multiplying 18 cm^3 by 1.297 g/cm^3 (18 × 1.297 = 23.346 g), which yields 23.346g $MgCl_2$ in composition (DS-100)-40.

DE 25

The density, or specific gravity of DE 25 corn syrup is more variable than $MgCl_2$, ranging between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition (DS-100)-40, the weight in grams is found by multiplying 40cm^3 by 1.30g/cm^3 (40 ×1.30 = 52g), which yields 52g DE 25 in composition (DS-100)-40.

Water

The density of water at nineteen degrees Celsius is 1.00 cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (18% +40%) = 42%) 42% of the composition. Assuming 100 cm^3 of composition (DS-100)-40, the grams of water present is determined by multiplying 42g/cm^3 by 1.00 /cm^3 (42 × 1 = 42g), which yields 42g of water in composition (DS-100)-40.

The weights of the individual components are added together to determine the total weight of the composition; the total weight is then utilized to determine each component's weight percentage. For example, $MgCl_2$ (23.346g) + DE 25 (52g) + water (42g) = 117.346g total weight of composition (DS-100)-40. 23.346 g of $MgCl_2$ represents 19.89% by weight of composition (DS-100)-40. 52g of DE 25 represents 44.31 % by weight of composition (DS-100)-40. 42g of water represents 35.79% by weight of composition (DS-100)-40.

The following table summarizes the weight of each component present in the compositions, as well as the percent of the composition represented by the weight:

Composition	$MgCl_2$		D.E.25		Water	
	Mass (g)	% by weight	Mass (g)	% by weight	Mass (g)	% by weight
(DS-100)-10	35.019	31.54%	13	11.71%	63	56.75%
(DS-100)-20	31.128	27.52%	26	22.98%	56	49.50%
(DS-100)-40	23.346	19.89%	52	44.31%	42	35.79%

It is also taught, as on page 18 of the '575 provisional, to use a 30% calcium magnesium acetate (CMA) solution instead of $MgCl_2$ in the deicing and anti-icing compositions of the present invention. CMA has the molecular formula of $C_2H_4O_2$ Ca Mg, and a specific gravity of 1.2 (obtained from Merck Index). We can insert CMA into the calculations for compositions A-10, A-20, A-40, (DS-100)-10, (DS-100)-20, and (DS-100)-40 to determine the weight percent of the compositions with CMA.

Composition A-10[CMA]

CMA

The specific gravity of CMA is 1.2 g/cm^3, as shown by attached Exhibit B, two material safety data sheets for CMA. Assuming 100 cm^3 of composition A-10, the weight in grams is found by multiplying 27 cm^3 by 1.2 g/cm^3 (27 × 1.2 = 32.4g), which yields 32.4g CMA in composition A-10[CMA].

DE 25

The density, or specific gravity of DE 25 corn syrup ranges between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition A-10[CMA], the weight in grams is found by multiplying 4 cm^3 by 1.30 g/cm^3 (4 ×1.30 = 5.2 g), which yields 5.2g DE 25 in composition A-10[CMA].

Water

The density of water at nineteen degrees Celsius is 1.00 g/cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (4% DE25 + 27%

CMA) = 69%) 69% of the composition. Assuming 100 cm^3 of composition A-10[CMA], the weight in grams of water present is determined by multiplying 69 g/cm^3 by 1.00 g/cm^3 (69 × 1 = 69 g), which yields 69g water in composition A-10[CMA].

The weights of the individual components are added together to determine the total weight of the composition. The total weight is then utilized to determine each component's weight percentage. For example, CMA (32.4g) + DE 25 (5.2g) + water (69g) = 106.6g total weight of composition A-10[CMA]. 32.4g of CMA represents 30.39% by weight of composition A-10[CMA]. 5.2g of DE 25 represents 4.88 % by weight of composition A-10[CMA]. 69g of water represents 64.73% by weight of composition A-10[CMA].

Composition A-20 [CMA]

CMA

The specific gravity of CMA is 1.2 g/cm^3. Assuming 100 cm^3 of composition A-20[CMA], the weight in grams is found by multiplying 24 cm^3 by 1.2 g/cm^3 (24 × 1.2 = 28.8g), which yields 28.8g CMA in composition A-20[CMA].

DE 25

The density, or specific gravity of DE 25 corn syrup ranges between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition A-20[CMA], the weight in grams is found by multiplying 8 cm^3 by 1.30 g/cm^3 (8 ×1.30 = 10.4 g), which yields 5.2g DE 25 in composition A-20[CMA].

Water

The density of water at nineteen degrees Celsius is 1.00 g/cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (8% DE 25 + 24% CMA) = 68%) 68% of the composition. Assuming 100 cm^3 of composition A-20[CMA], the grams of water present is determined by multiplying 68 g/cm^3 by 1.00 g/cm^3 (68 × 1 = 68g), which yields 68g of water in composition A-20[CMA].

The weights of the components are added together to determine the total weight of the composition. The total weight is then utilized to determine each component's weight percentage. For example, CMA (28.8g) + DE25 (10.4g) + water (68g) = 107.2g total weight of composition A-20. 28.8g of CMA represents 26.87% by weight of composition A-20[CMA]. 10.4g of DE 25 represents 9.70 % by weight of composition A-20[CMA]. 68g of water represents 63.43% by weight of composition A-20[CMA].

Composition A-40 [CMA]

CMA

The specific gravity of CMA is 1.2 g/cm^3. Assuming 100 cm^3 of composition A-40[CMA], the weight in grams is found by multiplying 18 cm^3 by 1.2 g/cm^3 (18 × 1.2 = 21.6g), which yields 21.6g CMA in composition A-40[CMA].

DE 25

The density, or specific gravity of DE 25 corn syrup ranges between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition A-40[CMA], the weight in grams is found by multiplying 16 cm^3 by 1.30 g/cm^3 (16 ×1.30 = 20.8 g), which yields 20.8g DE 25 in composition A-40[CMA].

Water

The density of water at nineteen degrees Celsius is 1.00 g/cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (18% CMA +16% DE 25) = 66%) 66% of the composition. Assuming 100 cm^3 of composition A-40[CMA], the grams of water present is determined by multiplying 66 g/cm^3 by 1.00 g/cm^3 (66 × 1 = 66 g), which yields 66g of water in composition A-40[CMA].

The weights of the components are added together to determine the total weight of the composition. The total weight is then utilized to determine each component's weight percentage. For example, CMA (21.6g) + DE25 (20.8g) + water (66g) = 108.4g total weight of composition

A-40[CMA]. 21.6g of CMA represents 19.93% by weight of composition A-40[CMA]. 20.8g of DE 25 represents 19.19% by weight of composition A-40[CMA]. 66g of water represents 60.89% by weight of composition A-40[CMA].

The following table summarizes the weight of each component present in the CMA compositions, as well as the percentage of the composition represented by the weight:

Composition	CMA		D.E.25		Water	
	Mass (g)	% by weight	Mass (g)	% by weight	Mass (g)	% by weight
A-10[CMA]	32.4	30.39%	5.2	4.88%	69	64.73%
A-20[CMA]	28.8	26.87%	10.4	9.70%	68	63.43%
A-40[CMA]	21.6	19.93%	20.8	19.19%	66	60.89%

The following represents a determination of the compositions of the invention for CMA solution with DS-100 as the carbohydrate source.

Composition (DS-100)-10[CMA]

CMA

The specific gravity of CMA is 1.2 g/cm3. Assuming 100 cm^3 of composition (DS-100)-10[CMA], the weight in grams is found by multiplying 27 cm^3 by 1.2 g/cm^3 ($27 \times 1.2 = 32.4g$), which yields 32.4g CMA in composition (DS-100)-10[CMA].

DE 25

The density, or specific gravity, of DE 25 corn syrup varies between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition (DS-100)-10[CMA], the weight in grams is found by multiplying 10 cm^3 by 1.30 g/cm^3 ($10 \times 1.30 = 13$ g), which yields 13g DE 25 in composition (DS-100)-10[CMA].

Water

The density of water at nineteen degrees Celsius is 1.00 g/cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (10% + 27%) = 63%) 63% of the composition. Assuming 100 cm^3 of composition (DS-100)-10[CMA], the weight in grams of water present is determined by multiplying 63 g/cm^3 by 1.00 g/cm^3 (63 × 1 = 63 g), which yields 63g water in composition (DS-100)-10[CMA].

The weights of the components are added together to determine the total weight of the composition; and the total weight is then utilized to determine each component's weight percentage. For example, CMA (32.4g) + DE 25 (13g) + water (63g) = 108.4g total weight of composition (DS-100)-10[CMA]. 32.4g of CMA represents 29.90% by weight of composition (DS-100)-10[CMA]. 13g of DE 25 represents 11.99% by weight of composition (DS-100)-10[CMA]. 63g of water represents 58.12% by weight of composition (DS-100)-10[CMA].

Composition (DS-100)-20[CMA]

CMA

The specific gravity of CMA is listed as 1.2 g/cm^3. Assuming 100 cm^3 of composition (DS-100)-20[CMA], the weight in grams is found by multiplying 24 cm^3 by 1.2 g/cm^3 (24 × 1.2 = 28.8g), which yields 28.8g CMA in (DS-100)-20[CMA].

DE 25

The density, or specific gravity of DE 25 corn syrup varies between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition (DS-100)-20[CMA], the weight in grams is found by multiplying 20 cm^3 by 1.30 g/cm^3 (20 ×1.30 = 26g), which yields 26g DE 25 in composition (DS-100)-20[CMA].

Water

The density of water at nineteen degrees Celsius is 1.00 g/cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (20% + 24%) = 56%)

56% of the composition. Assuming 100 cm^3 of composition (DS-100)-20[CMA], the grams of water present is determined by multiplying 56 g/cm^3 by 1.00 g/cm^3 (56 × 1 = 56g), which yields 56g of water in composition (DS-100)-20[CMA].

The weights of each individual component are added together to determine the total weight of the composition. The total weight is then utilized to determine each component's weight percentage. For example, CMA (28.8g) + DE 25 (26g) + water (56g) = 110.8g total weight of composition (DS-100)-20[CMA]. 28.8g of CMA represents 25.99% by weight of composition (DS-100)-20[CMA]. 26g of DE 25 represents 23.47% by weight of composition (DS-100)-20[CMA]. 56g of water represents 50.54% by weight of composition (DS-100)-20[CMA].

Composition (DS-100)-40[CMA]

CMA

The specific gravity of CMA is 1.2 g/cm^3. Assuming 100 cm^3 of composition (DS-100)-40[CMA], the weight in grams is found by multiplying 18 cm^3 by 1.2 g/cm^3 (18 × 1.2 = 21.6 g), which yields 21.6g CMA in composition (DS-100)-40[CMA].

DE 25

The density, or specific gravity of DE 25 corn syrup varies between 1.28 – 1.32 g/cm^3. Using an intermediate number of 1.30 g/cm^3, and assuming 100 cm^3 of composition (DS-100)-40[CMA], the weight in grams is found by multiplying 40cm^3 by 1.30g/cm^3 (40 ×1.30 = 52g), which yields 52g DE 25 in composition (DS-100)-40[CMA].

Water

The density of water at nineteen degrees Celsius is 1.00 cm^3. Water comprises the remaining component of the composition, and therefore represents (100% - (18% +40%) = 42%) 42% of the composition. Assuming 100 cm^3 of composition (DS-100)-40[CMA], the grams of

water present is determined by multiplying 42g/cm^3 by 1.00 /cm^3 (42 × 1 = 42g), which yields 42g of water in composition (DS-100)-40[CMA].

The weights of the individual components are added together to determine the total weight of the composition; the total weight is then utilized to determine each component's weight percentage. For example, CMA (21.6g) + DE 25 (52g) + water (42g) = 115.6g total weight of composition (DS-100)-40[CMA]. 21.6 g of CMA represents 18.69% by weight of composition (DS-100)-40[CMA]. 52g of DE 25 represents 44.98 % by weight of composition (DS-100)-40[CMA]. 42g of water represents 36.33% by weight of composition (DS-100)-40[CMA].

The following table summarizes the weight of each component present in the compositions, as well as the percent of the composition represented by the weight:

Composition	CMA		D.E.25		Water	
	Mass (g)	% by wt.	Mass (g)	% by wt.	Mass (g)	% by wt.
(DS-100)-10[CMA]	32.4	29.90%	13	11.99%	63	58.12%
(DS-100)-20[CMA]	28.8	25.99%	26	23.47%	56	50.54%
(DS-100)-40[CMA]	21.6	18.69%	52	44.98%	42	36.33%

The deicing compositions were diluted to various concentrations, including from 5% dissolved solids to 35% dissolved solids as shown on page 15 of the '575 provisional. In order to demonstrate the full range of the components present in the compositions of the present invention, we will show the percent by weight of the compositions when diluted to 5% dissolved solids. The following table summarizes the breakdown of components of the deicing formulations relevant to this claim set in the '575 provisional:

Deicing Composition (including % dissolved solids after dilution)	Carbohydrate % Volume	Salt % Volume (type of salt and approximate concentration)	Carbohydrate % By Weight	Salt % By Weight
A-10 10:90 of 40% DS 25 DE CSU & 30% MgCl2	4% DE 25	27% $MgCl_2$	4.76% DE 25	32.06% $MgCl_2$
A-10 (~5% DS)	0.6% DE 25	4.2% $MgCl_2$	0.77% DE 25	5.37% $MgCl_2$
A-20 20:80 of 40% DS 25 DE CSU & 30 % MgCl2	8% 25 DE	24% $MgCl_2$	9.50% DE 25	28.42% $MgCl_2$
A-20 (~5%DS)	1.3% 25 DE	3.8% $MgCl_2$	1.66% DE 25	4.86% $MgCl_2$
A-40 40:60 of 40% DS 25 DE CSU & 30 % MgCl2	16% 25 DE	18% $MgCl_2$	18.88% DE 25	21.20% $MgCl_2$
A-40 (~5%DS)	2.3% DE 25	2.6% $MgCl_2$	2.95% DE 25	3.32% $MgCl_2$
(DS-100) -10	10% DE 25	27% $MgCl_2$	11.71% DE 25	31.54% $MgCl_2$
(DS-100) - 20	20% DE 25	24% $MgCl_2$	22.98% DE 25	27.52% $MgCl_2$
(DS-100) – 40	40% DE 25	18% $MgCl_2$	44.31% DE 25	19.89% $MgCl_2$
A 10[CMA] 10:90 of 40 % DS of 25 DE CSU & 30 % calcium magnesium acetate	4 % DE 25	27 % CaMg Acetate	4.88% DE 25	30.39% CMA
A-10[CMA] (25% DS)	0.6 % DE 25	4.2 % CaMg Acetate	0.77% DE 25	4.99% CMA
A-20[CMA] 20:80 of 40 % DS of 25 DE CSU & 30 % calcium magnesium acetate	8% DE 25	24% CMA	9.7% DE 25	26.87% CMA
A-20[CMA] (~ 5 % DS)	1.25 % DE 25	3.75 % CaMg Acetate	1.67% DE 25	4.44% CMA
A-40[CMA] 40:60 of 40 % DS of 25 DE	16 % DE 25	18 % CaMg Acetate	19.19% DE 25	19.93% CMA

CSU & 30 % calcium magnesium acetate	(solids of 25 DE corn syrup)			
A-40[CMA] (~ 5 % DS)	2.5 % DE 25	2.8 % CaMg Acetate	2.95% DE 25	3.31% CMA
(DS-100) -10 [CMA]	10% DE 25	27% CMA	11.99% DE 25	29.90% CMA
(DS-100) -20 [CMA]	20% DE 25	24% CMA	23.47% DE 25	25.99% CMA
(DS-100) - 40 [CMA]	40% DE 25	18% CMA	44.98% DE 25	18.69% CMA

Rejections Under 35 U.S.C §102

Anticipation under 35 U.S.C §102 requires each and every limitation of the claim to be disclosed in a single prior art reference, either expressly or inherently. Under 35 U.S.C. § 102(e) the anticipating reference must disclose the invention in an application for patent (or an issued patent) by another filed in the United States before the invention by the Applicant.

Reconsideration is requested of the rejection of claims 46-53 as anticipated by Hartley Patent Nos. 6,436,310; 6,599,440; 6,440,325; and Publication No. 2003/0209690. The Hartley patents all claim priority to U.S. Patent Application No. 09/755,687, filed January 5, 2001. U.S. Patent Application No. 09/755,687 is a continuation-in-part (CIP) application of abandoned U.S. Patent Application No. 09/224,906, filed January 4, 1999, which in turn claimed the benefit of Provisional Application No. 60/070,636, filed January 7, 1998.

The present application is a continuation of U.S. Patent Application No. 10/260,225, filed September 30, 2002, which is a continuation of and hereby incorporates by reference U.S. Patent Application No. 10/025,210, filed December 19, 2001 and issued as U.S. Patent No. 6,468,442 on October 22, 2002, which is a continuation of and hereby incorporates by reference, application no. PCT/US00/20218, filed July 25, 2000 and published February 1, 2001 as International Publication No. WO/01/07532, which, in turn claims priority to and hereby incorporates by reference, U.S. Provisional Application No. 60/145,575, filed July 26, 1999.

As demonstrated in this response, the claims of the present application are supported by U.S. Provisional Application No. 60/145,576, and are therefore entitled to a priority date of July

26, 1999. The filing date of the CIP application to which the Hartley patents claim priority is January 5, 2001, later than the priority date of the present application. Therefore, in order for the Hartley patents to be properly asserted against the claims of the present application under 35 U.S.C. 102(e), the Hartley patents would have to rely on the filing date of either U.S. Patent Application No. 09/224,906, ('906 application) filed January 4, 1999, or Provisional Application No. 60/070,636, ('636 Provisional) filed January 7, 1998. In order for the '906 application or the '636 provisional to be properly asserted against the claims of the present application, the prior applications must have the support required under 35 U.S.C. §112 first paragraph for the invention as claimed. See M.P.E.P. §2136.03 (IV).

Regarding pending claim 46, neither U.S. Patent Application No. 09/224,906 or Provisional Application No. 60/070,636, provide support for the claimed features, "in which the constituents are present in the following concentration: carbohydrate 3 to 44 [%], calcium magnesium acetate 5 to 25 [%], water balance, and where said carbohydrate has a molecular weight in the range of about 180 to 1500, and is at least one selected from the group consisting of glucose, fructose and higher saccharides based on glucose and/or fructose and mixtures thereof." Claims 47-49 depend directly from claim 46, contain the same limitations as claim 46, and are therefore not anticipated by the Hartley Patents.

Regarding pending claim 50, neither U.S. Patent Application No. 09/224,906 or Provisional Application No. 60/070,636, provide support for the claimed features, "in which the constituents are present in the following concentration: carbohydrate 3 to 44 [%], calcium magnesium acetate 5 to 40 [%], water balance, and where said carbohydrate has a molecular weight in the range of about 180 to 1500, and is at least one selected from the group consisting of glucose, fructose and higher saccharides based on glucose and/or fructose and mixtures thereof." Claims 51-53 depend directly from claim 50 and contain the same limitations as claim 50, and are therefore not anticipated by the Hartley patents.

Applicant submits that all of the claims are now in condition for allowance, which action is requested. Please apply any charges or credits to Deposit Account No. 11-1110.

Respectfully submitted,

Dec 29, 2005
Date

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